CIBO Environmental Committee Meeting
Boiler MACT & Related Rules Status

June 11, 2014

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CIBO- EPA Meeting- March 17, 2014

EPA- Steve Fruh, Peter Tsirigotis, Bob Wayland, Steve Page

- CO work practice for coal fired boilers
  - Some designs cannot meet limits
  - MATS uses work practice for CO
  - Issue with continuous certification of compliance with use of emission test approach
- EPA response:
  - MATS record supports work practice, BMACT does not
  - More OHAP detects in BMACT than MATS
  - Reconsidering 130 ppm limits to fix notice/comment, not whether should be CO limits
  - If limits should be higher, provide data & they will consider
  - Does data support setting emission test limits at CEM limits?
  - Continuous compliance is determined with maintaining 30-day rolling average O2 level/use of O2 trim system

CIBO- EPA Meeting- Startup/Shutdown

- Startup/shutdown issues
  - Current startup definition is unworkable
- EPA response:
  - Discussion tabled until Jim Eddinger was available
  - JE also working on MATS SU/SD reconsideration
    - Working hard to finalize MATS reconsideration but EGU NSPS was consuming all time
  - Requested data to support time needed for startup
    - But don't be greedy
  - Willing to develop different definitions by boiler design
    - But no way EPA will go with unit-specific startup procedure approach
  - Working through question of whether a fuel trip is a shutdown
    - (CIBO reiterated it cannot be a malfunction since not to be recurring)
  - Pointed to MATS TSD (9/13)- could not find- need to request
  - McCarthy wants to be done boiler rules- do not want to reconsider the reconsideration
    - Aim package out in 2-3 months, final by 2014 year end

CIBO- EPA Meeting- UPL Issue

- EPA positions
  - Current UPL based limits are supportable
  - Intent of small data set remand is to support justification of current figures or very close to them
  - Have hired statistical consultant
  - May look at alternate data analysis approaches, but hope to keep limits the same
  - CIBO stressed uncertainty relative to compliance planning
  - Tsirigotis offered to let them know of any states where difficulty in getting extensions and they would encourage flexibility
  - No remand of fuel variability factor- feel justified in their explanation how not double counting
  - Believe will get Court deference on UPL and fuel variability

CIBO Call with EPA on SU/SD Issues

Jim Eddinger, Bob Wayland, Mary Johnson, Nick Hudson

- CIBO comments
  - Detroit Stoker- stokers guaranteed down to 1/3 load; 25% and 4 hours okay
  - Some units output steam upon lightoff but time to get on line; 25% and 4 hours okay
  - NCASI has data to provide to EPA
  - Baghouse blinding is major issue
  - Superheater design is key in time required
  - Low pressure saturated steam boilers have much shorter startup times
  - FBC units can take much longer than suspension fired units

CIBO Call with EPA on SU/SD Issues

- EPA comments
  - Work practices need to be based on MACT
    - Need to use information on what best performers do relative to load and time
  - Reiterated prior CO compliance position
    - Where CO compliance testing is used to demonstrate meeting the CO emission limit, continuous compliance is only based on maintaining the minimum O2 level established during the prior performance test on a 30 rolling average basis
  - EPA will likely require monitoring steam flow and boiler pressure during startup in order to demonstrate compliance with any time/output definition requirements
  - EPA concern with trying to define startup is there might be some units with shorter mandatory startup times in their permits

CIBO Call with EPA on SU/SD Issues

- CIBO final points
  - ~1/3 load would be reasonable rate in order to be fully firing primary fuel, so 25% is reasonable for most units
  - Need to be careful with “best performing units” approach
    - Focus only on shortest startup time only looks at potential emissions, but not what is needed for equipment integrity and safety
    - Detailed unit design and system conditions that determine actual startup times may not be available to cross-reference required time/load for startup

CO Compliance Potential Approach- CIBO Action

- Leverage EPA statement that only O2 continuous compliance is required when CO emission test used
- Propose Q/A to EPA for inclusion in their web Q/As stating the above
- Include Q/A relative to typical O2 trim system design and operation
  - Not in Cascade/Automatic mode during startup/shutdown
  - Not in C/A during calibrations
  - Not in C/A during equipment/fuel feed issues
  - Others?
  - Will circulate draft for review/comment soon

CIBO Startup Survey

- Conducted after discussion with EPA
- Intention to support workable times for ICI units

EPA Proposed EGU Startup Time Periods

EPA Proposed Time Periods for EGUs		
Cold Startup	Warm Start	Hot Start
Offline for ≥120 hours prior to initial lightoff	Offline for 25-119 hours prior to initial lightoff	Offline for ≤24 hours prior to initial lightoff

However,…

- Informal discussion with Jim Eddinger indicated EPA may be thinking of using a total time limit for startup from first fire to stable operation

CIBO Survey Response Summary- Cold Startup

					Cold Startup Data			
Boiler Type	**Startup Fuel**	**Primary Fuel**	**Control**	**Responses Received (# units)**	**Avg hours to come online after first startup fuel ignition**	**Avg time to reach 25% load after coming online**	**Avg time to reach stable operation after 25% load is reached**	**Total time to reach stable operation**
Circulating FBC	Natural gas	Coal or coal/biomass	Baghouse	20	4.5-31	0.1-4	1-26	6.5-45
Bubbling FBC	Natural gas	Coal	Baghouse	3	6	1	1	8
Pulverized Coal	Gas or #2 oil	Coal	Baghouse	2	1-6.5	0.1-4	1.4-4	8-9
			ESP	11	5.5-36	0-3	0-5	7-40
Stoker	oil, oil soaked rags, other solid fuel	Coal	Baghouse	7	1-8	0.025-5	0.5-8	2.2-15
		Biomass	Baghouse	1	24	1	1	26
		Coal	ESP	6	4.5-10	0-1	0-3	5.5-14
		Biomass	ESP	11	4-24	0.5-2	0.5-6.17	6-26
		Biomass	Scrubber	5	4.5-6.5	0.5-1	0.5-2	7-8
Liquid	gas	Liquid	Any	4	5.5-8	1-2	1-2	7.5-11

CIBO Survey Response Summary- Warm Start

					Warm Start Data			
Boiler Type	**Startup Fuel**	**Primary Fuel**	**Control**	**Responses Received (# units)**	**Avg hours to come online after first startup fuel ignition**	**Avg time to reach 25% load after coming online**	**Avg time to reach stable operation after 25% load is reached**	**Total time to reach stable operation**
Circulating FBC	Natural gas	Coal or coal/biomass	Baghouse	20	4.4-18	0.1-4	2.1-24	6.6-34
Bubbling FBC	Natural gas	Coal	Baghouse	3	4	1	1	6
Pulverized Coal	Gas or #2 oil	Coal	Baghouse	2	no response	no response	no response	no response
			ESP	11	5.5-16	0.1-1	0-9	7-18
Stoker	oil, oil soaked rags, other solid fuel	Coal	Baghouse	7	1-6	0.039-6	0.5-6	2.4-17
		Biomass	Baghouse	1	24	1	1	26
		Coal	ESP	6	5-8	1	1	7-12
		Biomass	ESP	11	4-24	0.5-1	0.5-2.8	6-26
		Biomass	Scrubber	5	4.5-6.5	0.5-1	0.5-2	7-8
Liquid	gas	Liquid	Any	4	5.5-8	1-2	1-2	7.5-11

CIBO Survey Response Summary- Hot Start

					Hot Start Data			
Boiler Type	**Startup Fuel**	**Primary Fuel**	**Control**	**Responses Received (# units)**	**Avg hours to come online after first startup fuel ignition**	**Avg time to reach 25% load after coming online**	**Avg time to reach stable operation after 25% load is reached**	**Total time to reach stable operation**
Circulating FBC	Natural gas	Coal or coal/biomass	Baghouse	20	0.6-4	0.4-4	1-13	2.5-20
Bubbling FBC	Natural gas	Coal	Baghouse	3	2-4	1	1	4-6
Pulverized Coal	Gas or #2 oil	Coal	Baghouse	2	no response	no response	no response	no response
			ESP	11	3.5-9	0.1-1	0-4.7	5.5-11
Stoker	oil, oil soaked rags, other solid fuel	Coal	Baghouse	7	0.5-5	0.017-5	0.5-4	2.8-15
		Biomass	Baghouse	1	8	1	1	10
		Coal	ESP	6	4-7	1	1	6-11
		Biomass	ESP	11	2-8	0.5-1	0.5-2	4-10
		Biomass	Scrubber	5	4.5-6.5	0.5-1	0.5-2	6.5-7.5
Liquid	gas	Liquid	Any	4	4.5-7	0.5-2	1-2	6.5-11

Best Performer Approach

- URS looked at 99% UPL for survey data to see if viable figures emerge

UPL Evaluation- Startup Total Time

Startup Total				
Data	**Unit Type**	**99UPL**	**# Of Data Points**	**Average**
Cold Start	All	11	10	4.96
	CFB	110	3	17.47
	BFB		1	8.00
	PC		2	7.00
	Stoker/HSG	12	4	3.28
	Liquid		1	7.50
Warm Start	All	11	7	4.73
	CFB	330	2	12.30
	BFB		1	6.00
	PC		1	7.00
	Stoker/HSG		3	3.04
	Liquid		1	7.50
Hot Start	All	3	8	2.44
	CFB		3	2.50
	BFB		1	4.00
	PC		1	5.50
	Stoker/HSG	7.6	4	3.10
	Liquid		1	6.50

UPL Evaluation- Time After 25%

Time After 25%				
Data	**Unit Type**	**99UPL**	**# Of Data Points**	**Average**
Cold Start	All	1.6	9	0.81
	CFB		3	1.00
	BFB		1	1.00
	PC		2	1.00
	Stoker/HSG	1.4	4	0.58
	Liquid		1	1.00
Warm Start	All	1.7	6	0.74
	CFB	14	2	2.30
	BFB		1	1.00
	PC		1	1.00
	Stoker/HSG		3	0.50
	Liquid		1	1.00
Hot Start	All	1.7	8	0.81
	CFB		3	1.00
	BFB		1	1.00
	PC		1	1.00
	Stoker/HSG	1.9	4	0.63
	Liquid		1	1.00

Additional Information Provided

THE BABCOCK & WILCOX COMPANY

OPERATING INSTRUCTIONS
BOILERS AND RELATED PRESSURE PARTS

Saturation temperature change is limited to 100F per hour heating rate and 70F per hour cooling rate for all boilers with rolled tube seats, to prevent any possibility of starting tube seat leaks from excessive temperature differentials. The temperature of the water used for filling should be within 100F of the drum temperature.

Saturation temperature change is limited to 100F per hour heating rate and 70F per hour cooling rate for all boilers unless special heating and cooling curves have been prepared for the specific contract.

How about an alternative work practice standard approach for individual units?

- 63.2, 63.6(g)- actually framed as alternative emission standard
- Must prove equivalency
- Must be published in Fed Reg
- Does not appear framed to address limited period work practice
- Maybe comment on proposed rule to differentiate work practice vs emission standard and allow permitting authority to establish unit specific approach? TBD

Reconsideration/Review Update

Reconsideration

- EPA will publish FR notice with more detail on reconsideration issues
  - Per meeting discussion, will likely only cover notice/comment items to allow comment
- Therefore, another proposed rule would be needed to cover technical corrections and any reconsideration changes

DC Circuit Court Review

- Court issued orders on EPA's remand motions and set a new briefing schedule (Lisa will cover schedule)
  - BMACT
    - Motion for remand of the record granted
    - Partial voluntary remand of numeric standards granted
    - Revision of briefing schedule granted
  - Area Source
    - Partial voluntary remand of numeric standards granted
  - CISWI
    - Motion of remand of record granted
    - Partial voluntary remand of numeric standards granted
    - Revision of briefing schedule granted
  - NHSM
    - ENGO motion to extend filing deadlines granted

Questions and Further Discussion?